

IN THE U.S. DISTRICT COURT FOR MARYLAND
Southern Division

BEYOND SYSTEMS, INC.	*	
	*	
Plaintiff	*	
	*	
v.	*	Case No. PJM 08 cv 0921
	*	
WORLD AVENUE U.S.A., LLC, et al.,	*	
	*	
Defendants	*	
	*	

DECLARATION OF NEAL A. KRAWETZ

I, Neal A. Krawetz, pursuant to 28 U.S.C. §1746 hereby declare under penalty of perjury as follows:

1. I am over 18 years of age and fully competent to testify to the facts set forth in this declaration.

Background and Qualifications

2. I have a PhD in Computer Science from Texas A&M University.
3. I have written three books, including a graduate level college textbook titled *Introduction to Network Security*. This textbook covers IP, TCP, SMTP, DNS, and other protocols relevant to this case. The textbook is a required text for many university courses on networks and security, including courses offered at California State University at Northridge, Kennesaw State University in Georgia, the University of Texas in San Antonio, and Weber State University in Ogden, Utah. The other two books discuss the Linux operating system and include sections on installing and configuring mail servers.
4. I have worked with the Open Web Application Security Project (OWASP), where I assisted with their documented best practices and wrote the sections on spam and phishing.
5. I have written numerous articles on spam, phishing, and malware, including *Anti-Spam Solutions and Security*, Part I and Part II for *Security Focus* (February and March 2004)¹, and "Anti-Honeypot Technology" for *IEEE Security and Privacy* (January-February 2004, Vol.2, No.1). These documents provide an in-depth analysis of existing solutions and methods employed by both spam and anti-spam participants.
6. Since 1998 I have presented in a variety of forums on the topics of email, spam, anti-anonymity, and computer forensics. Some of my public presentations include:
 - *A Picture's Worth: Digital Image Analysis and Forensics*. Variations of this presentation have been given at conferences including the Black Hat Briefings (Las Vegas, NV, August 2007 and Washington DC, February 2008), Lockdown (University of Wisconsin,

¹ <http://securityfocus.com/infocus/1763> and <http://securityfocus.com/infocus/1766>

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Madison, July 2008), CIScon (Helena, Montana, September 2008), and the U.S. Department of Defense Cyber Crime Conference 2010 (St. Louis, Missouri, January 2010).

- *You Are What You Type: Non-Classical Computer Forensics*. Presented at the Black Hat Briefings, Las Vegas, NV, August 2006.
- *Nobody's Anonymous: Tracking Spam and Covert Channels*. Presented at the Black Hat Briefings, Las Vegas, NV, July 2004. (Presented under the pseudonym, "Curtis Kret".)
- *Evil with Email: Evaluation of an Insecure Network Service*. Presented at the ISSA Colorado Springs chapter security seminar, March 2004.
- *Nobody's Anonymous: Tracking Spam*. Presented at the Black Hat Briefings, Seattle, WA, January 2004. (Presented under the pseudonym, "Curtis Kret".)
- *Spam Tracking and Covert Channels*. Presented at InfowarCon, Washington DC, October 2003.

7. I have presented on email related issues and computer forensics, assisted law enforcement and government agencies, and provided consulting services to security and anti-spam companies.

8. I have been an expert witness on two other spam-related cases:

- Gordon, et al. v. Virtumundo, Inc. et al. United States District Court, W.D. Wash. Case No. CV06-0204JCC.
- Beyond Systems, Inc., v. Keynetics Inc., et al. United States District Court, District of Maryland, Southern Division. Case No. 8:04-cv-00686.

9. I am a very vocal critic of the Internet Corporation for Assigned Names and Numbers (ICANN). Among other tasks, ICANN sets guidelines for domain name registration and WHOIS records. These items are relevant to this case. ICANN has taken notice of my criticisms. In 2008, ICANN attempted to fast-track approval of a new global top-level domain name (gTLD) registration system. Part of the review process included a comment period from the general public. In ICANN's 154-page summary², they explicitly cited my feedback³ in five different subject areas; more than any other individual, and more than most of the companies and agencies that submitted feedback. ICANN's conclusion was to postpone the new process until the technical issues could be better addressed.

10. A copy of my resume is attached.

Summary of My Report

11. I have reviewed the BSI document titled "Plaintiff's Opposition to Defendant WAUSA's Motion to Compel As To Its Third Set of Interrogatories". This document includes a statement by BSI and a declaration by BSI's Paul Wagner. Both the statement and declaration contain numerous errors, inaccuracies, half-truths, and inaccurate applications of common terms to the field. The declaration by Paul Wagner contains at least one error in almost every paragraph.

12. This declaration focuses on the technical inaccuracies provided by BSI and Paul Wagner,

² <http://www.icann.org/en/topics/new-gtlds/agv1-analysis-public-comments-18feb09-en.pdf>

³ <http://forum.icann.org/lists/gtld-evaluation/msg00014.html>

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as they relate to BSI's use of Verizon's services. The inaccuracies are addressed in the order that they appear in the documents provided by BSI.

Inaccurate Statements by BSI Concerning the Dempsey-Jones Deposition

13. Beginning on page 6 (under Section III), BSI attempts to discredit Tina Dempsey-Jones, subject matter expert at Verizon. BSI makes the following claims that are provably inaccurate:

14. (1) BSI states, "To support its cause, WAUSA also relies on what amount to legal opinions from a non-lawyer sales representative at Verizon, in an attempt to portray BSI's use of Verizon's services as 'illegal.'"

15. Although Dempsey-Jones is not a lawyer, that does not exclude her eligibility as a subject matter expert. Moreover, calling her a "sales representative" is a gross simplification of her background as a "senior marketing manager, product line manager for medium business customers." (Deposition of Tina Dempsey-Jones, page 8, lines 17-18; see Exhibit 20100718-01.) Moreover, as she testified on page 9 lines 6-7, Dempsey-Jones is not a "[REDACTED]"; she works with customers: "[REDACTED]". She also states on page 9 lines 10-17 that she is the subject matter expert for Verizon:

[REDACTED]

16. (2) BSI states:

Ms. Dempsey-Jones testified that she is a marketing manager/product line manager for medium business customers (having annual volume over \$250,000) at Verizon. She has no experience with BSI's operations, or with Verizon's enforcement against small businesses (less than \$250,000 per year) of its 5-year-old form contract used for subscribers of all sizes, and is unable to identify any conduct of BSI that would arguably be in violation of that contract.

17. Although Dempsey-Jones may not have direct experience with BSI, BSI did report incoming revenue of over [REDACTED] for both 2000 and 2007 (see Exhibit 20100718-02). This includes BSI's use of Verizon's services in 2007. The amount of revenue matches the range covered by Dempsey-Jones' experience.

18. (3) On page 9 and 10 of BSI's opposition statement, BSI repeatedly focuses on the DSL questions asked to Dempsey-Jones. However, Dempsey-Jones was also asked about the FIOS services that BSI uses for its ICS business offerings. Specifically on pages 31 and 32 of her deposition (see Exhibit 20100718-01), Dempsey-Jones repeatedly stated that BSI's use is not permitted:

Q: [REDACTED]?

A: [REDACTED]

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Q: [REDACTED]
[REDACTED]

A: [REDACTED]

Q: [REDACTED]
[REDACTED]

A: [REDACTED]

Q: [REDACTED]
[REDACTED]

A: [REDACTED]

Q: [REDACTED]
[REDACTED]

A: [REDACTED]

Q: [REDACTED]
[REDACTED]

A: [REDACTED]

Q: [REDACTED]
[REDACTED]

A: [REDACTED]

Q: [REDACTED]
[REDACTED]

A: [REDACTED]

Q: [REDACTED]
[REDACTED]

A: [REDACTED]

Q: [REDACTED]
[REDACTED]

A: [REDACTED]

Q: [REDACTED]

A: [REDACTED]

19. Based on the testimony of Verizon's subject matter expert, BSI cannot legitimately provide the DNS hosting, web hosting, email hosting, and other network services that BSI claims to offer.

Unproven Claim of Legitimacy

20. BSI repeatedly states that they pay Verizon, Verizon accepts the payment, and Verizon has not terminated BSI's service. The implication is that this legitimizes BSI's operation. Specifically, BSI wrote:

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~~BSI's use of the IP addresses on the Verizon FIOS line, and all
clients use those addresses. Verizon permits this use and has accepted
most of the spam that has been sent, while this use has been going on and
for many years. WAUSA did not have any information to the contrary.~~

21. There are two plausible and probable alternatives to BSI's claim of legitimacy. First Verizon may not have proof that BSI is operating outside of the Terms of Service. For example, Verizon does not permit people to send spam on their network, yet SPAM-W081358 is a spam email (not sent by WAUSA) that came originated from a Verizon client in Pennsylvania. Verizon is unlikely to shut down a client unless there are complaints about usage that violates the Terms of Service.

22. The alternative is that Verizon is a large company. While one department in Verizon may be aware of BSI's violation, the enforcement branch may either not be aware or views addressing BSI's violations as a lower priority compared to violations from other Verizon clients.

23. In either case, Verizon's acceptance of payment for services performed under the Terms of Service does not legitimize actions explicitly forbidden by the Terms of Service (see Exhibit 20100718-03). Section 24 of Verizon's Terms of Service explicitly states that non-enforcement does not constitute consent:

~~Verizon is under no obligation at any time to enforce any provision of the Terms of Service.
Verizon's failure to enforce any provision of the Terms of Service does not constitute consent to the use of the service.
Verizon's failure to enforce any provision of the Terms of Service does not constitute consent to the use of the service.
Verizon's failure to enforce any provision of the Terms of Service does not constitute consent to the use of the service.~~

Declaration of Paul A. Wagner on Paul Wagner's Use of Verizon DSL and BSI's Use of Verizon FIOS for Business

24. The "Declaration of Paul A. Wagner on Paul Wagner's Use of Verizon DSL and BSI's Use of Verizon FIOS for Business" contains many errors. However, I will focus solely on the issues related to Verizon.

Paul Wagner, Paragraph 15: Wireless Hot Spot

25. In paragraph 15, Wagner stated, "Most of BSI's wireless hot spot activity has not involved any service by Verizon." The key word here is "Most"; he does not say "all", indicating that some wireless hot spot activity did use Verizon's service.

26. If there were any use of BSI's wireless network service by paid customers or to unaffiliated third parties that involved Verizon's upstream connection, then BSI would be in direct violation of Verizon's Terms of Service.

Paul Wagner, Paragraph 16-19: Non-Expert Sources

27. In paragraph 16, Paul Wagner references an unidentified "Verizon technical support representative" who helped him configure a network address.

28. I find it ironic that Wagner would cite an unidentified technical support representative while attempting to discredit Dempsey-Jones. It is possible that the support representative works

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for Dempsey-Jones since she is the “senior marketing manager, product line manager for medium business customers.”

29. In paragraph 17, Wagner argues that his use of Verizon’s services is permitted because Verizon has not shut him down. However, as already stated, it is more likely that Verizon is unaware of the usage that is forbidden by their Terms of Service. Moreover, Section 24 of the Terms of Service states that non-enforcement does not imply consent.

30. In paragraph 18, Wagner claims that Dempsey-Jones has an interpretation of the Verizon Terms of Service that differs from those of “Business sales agents, technical support staff, and senior manager” – all unidentified by Wagner. However, the provisions in Verizon’s FIOS Terms of Service have not dramatically changed since it was first introduced. Exhibit 20100718-03 is the May 2005 Terms of Service provided by Verizon. The document clearly states that resale and use by entities other than the Verizon customer are not permitted. Section 6 of the Terms of Service supports the Dempsey-Jones testimony:

[REDACTED]

31. The Verizon FIOS Terms of Service clearly states that the written Terms of Service takes precedence over all other agreements. Section 24 states:

[REDACTED]

32. The Verizon Terms of Service is very clear; it does not matter whether Wagner’s unnamed support staff, sales agent, senior management, or other non-legal representative granted Wagner permission to use Verizon’s services outside of the specified terms. The fact is: Verizon does not permit their clients to share Verizon’s service with any other clients.

33. Verizon does offer a backbone service for companies that wish to provide ISP services to non-Verizon clients. However, this option is not part of Verizon’s DSL or FIOS offerings. Instead, perspective ISP clients should contact the Verizon Global Wholesale department and seek information about the Transparent LAN Service (TLS). The web site is at <http://www22.verizon.com/wholesale/>. BSI does not appear to use this service.

Paul Wagner, Paragraphs 20-22: Inaccurate Citing of Verizon’s Blog and Press Releases

34. In paragraphs 20-22, Wagner attempts to support his interpretation of Verizon’s Terms of Service by citing a Verizon blog entry and press release about Verizon’s support for the Open Internet initiative. (See Exhibits 20100718-04 and 20100718-05.) Wagner appears to believe that the initiative permits BSI to offer open access of Verizon’s services to BSI clients. Wagner is grossly mistaken.

35. To bolster his argument, Wagner selectively cited paragraphs from the blog and news release texts. However, he took the citations out of context.

36. First, the press release and blog entry are from 2009 and 2010. Wagner is attempting to

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cite contemporary press statements to support actions made by BSI from approximately 2005 through today.

37. Second, regardless of the text in the blog and press release, the statements do not alter the restrictions in the Terms of Service. The Terms of Service explicitly states that it takes precedence over all other agreements.

38. Finally, both the blog entry and press release state Verizon's position on the Network Neutrality debate. Network neutrality refers to an ISP's ability to filter or censor network traffic based on network service and content. Most ISPs perform some form of filtering. For example, an ISP may filter emails for spam or block network ports that are commonly used by computer viruses and other forms of malware. However, some ISPs have used filtering as a means to block competition. For example, Comcast offers an Internet telephone service (VoIP or Voice over Internet Protocol). In 2008, the Federal Communications Commission (FCC) fined Comcast after determining that Comcast was using their position as an ISP to block competing VoIP services. In 2010, the U.S. Court of Appeals for the District of Columbia rejected the fine, claiming that the FCC did not have the appropriate jurisdiction. (See Exhibits 20100718-06 and 20100718-07.)

39. In 2005, the Federal Communications Commission released its Broadband Policy Statement, also called the Internet Policy Statement (see Exhibit 20100718-08) that lists four principles commonly called "Open Internet". In it, the FCC states that Consumers are entitled to:

- Access the lawful Internet content of their choice.
- Run applications and use services of their choice, subject to the needs of law enforcement.
- Connect their choice of legal devices that do not harm the network.
- Competition among network providers, application and service providers, and content providers.

40. The blog entry cited by Wagner begins with a paragraph that specifies the scope of the text. It says (my bold for emphasis):

Verizon and Google might seem unlikely bedfellows in the current debate around **network neutrality, or an open Internet**. And while it's true we do disagree quite strongly about certain aspects of government policy in this area – such as whether mobile networks should even be part of the discussion – there are many issues on which we agree. For starters we both think it's essential that the Internet remains an unrestricted and open platform – where people can access any content (so long as it's legal), as well as the services and applications of their choice.

41. Similarly, the press release cited by Wagner begins with a statement about Open Internet (my bold emphasis):

Verizon told the Federal Communications Commission on Monday (April 26 [2010]) that the public record of comments and testimony amassed by the agency during its **Open Internet** regulatory proceeding reveals an "emerging agreement on key goals for ensuring the continued success of the Internet."

42. Verizon's statements on "Open Internet" refer to their position on the network neutrality debate. Verizon promises to not censor network traffic that competes with Verizon's services. It

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is not permission for Verizon's clients to openly share their upstream connection with unaffiliated third parties. Wagner has taken Verizon's statements out of context. He has attempted to apply selective paragraphs outside of the network neutrality debate and in a way that directly conflicts with Verizon's written Terms of Service.

Paul Wagner, Paragraphs 23-29: Claims of a Non-ISP

43. In paragraphs 23-29, Wagner attempts to defend his use of Verizon's services. He repeatedly states that he does not resell or rebrand Verizon's services and does not provide Verizon's network addresses to clients.

44. Wagner appears to be missing the key issue. Verizon is the upstream provider and the Terms of Service do not permit the upstream connection to be used by anyone except Verizon's direct customer – in this case, BSI. BSI cannot legitimately use Verizon's connection for hosting equipment or services for BSI's clients (third party clients with respect to the Verizon-BSI agreement).

45. For example, Verizon provides the network address 71.126.148.132 to BSI. The usage of this address by mail.linkcenter.net – a BSI domain and system – is permitted by Verizon's Terms of Service. However, this same network address is used by mail.colorvivofilms.net and mail2.stlukeshouse.com, domains used by alleged BSI clients. This third party usage is forbidden because non-BSI entities are using the service that Verizon is providing exclusively to BSI.

Paul Wagner, Paragraphs 23-30: Use of "Assigning"

46. At the heart of the declaration is Wagner's opinion that Dempsey-Jones misunderstood the word "assign". Wagner attached an ARIN Number Resource Policy Manual (ARIN NRPM), dated June 7, 2010, that defines "assign" for purposes of defining when ARIN assigns or allocates Internet protocol (IP) addresses to end users or ISPs. This has nothing to do with the contractual relationship of an ISP, such as Verizon, and its customer, which is governed by the Terms of Service.

47. ARIN is the American Registry for Internet Numbers. As stated in "ARIN at a Glance" (Exhibit 20100718-09):

ARIN provides services related to the technical coordination and management of Internet number resources. The nature of these services is described in ARIN's mission statement:

Applying the principles of stewardship, ARIN, a nonprofit corporation, allocates Internet Protocol resources; develops consensus-based policies; and facilitates the advancement of the Internet through information and educational outreach.

48. Section 2.5 of the ARIN NRPM created a distinction between the terms "allocate" and "assign":

2.5. Allocate and Assign

A distinction is made between address allocation and address assignment, i.e., ISPs are "allocated" address space as described herein, while end-users are "assigned" address space.

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* Allocate - To allocate means to distribute address space to IRs [Internet Registries] for the purpose of subsequent distribution by them.

* Assign - To assign means to delegate address space to an ISP or end-user, for specific use within the Internet infrastructure they operate. Assignments must only be made for specific purposes documented by specific organizations and are not to be sub-assigned to other parties.

49. The definition states that “allocate” is used for network blocks that should be distributed by an ISP to its clients, while “assign” is used for network addresses used by an end-user. For example, the subnet 71.96.0.0 - 71.127.255.255 (including 71.126.148.132 used by BSI) was allocated by ARIN to Verizon for the purpose of sharing with Verizon’s customers. In contrast, 206.46.224.0 - 206.46.255.2 is assigned to Verizon for their own internal uses. In this latter case, Verizon is the expected end-user for the network addresses.

50. The Verizon Terms of Service are consistent in the usage of the word “assign”. For example, Section 20 repeatedly uses the word “assign” and not “allocate” when referring to the network addresses provided by Verizon to BSI:

~~20. IP Address and Domain Name Registration, Use, Assignment, cancellation or termination of the Agreement or an applicable Quotation, you agree not to use any IP addresses or address blocks assigned to you by us. If and when necessary, you may be required to forfeit the IP addresses assigned to you by us.~~

51. This word usage matches the Dempsey-Jones testimony. Verizon assigned network addresses to BSI for the exclusive use of BSI and not by BSI’s customers, either directly or indirectly.

52. In paragraph 27, Paul Wagner states, “It is however axiomatic that BSI assigns its static IP addresses to machines on its local network.” The problem is, BSI uses machines on its local network for providing client services. As I identified previously in this declaration’s paragraph 45, BSI uses network addresses provided by Verizon to host services for unauthorized third parties.

53. There is no evidence to suggest that BSI is an ISP. Any ISP activities performed by BSI are not permitted by the Verizon Terms of Service.

Conclusion

This declaration is based on my analysis of the provided information. I reserve the right to revise or amend this declaration, depending of the development of additional facts or circumstances.

I hereby declare under penalty of perjury of the laws of the United States of America that the foregoing is true and correct.

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Dated: July 19, 2010

A handwritten signature in black ink, appearing to read "Neal Krawetz", written over a horizontal line.

Neal Krawetz, Ph.D.
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